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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,572	12/09/2004	Josef H Burgert	60600A	2696

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THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
P. O. BOX 1967
MIDLAND, MI 48641-1967

EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT PAPER NUMBER

1713

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/517,572

Applicant(s)

BURGERT, JOSEF H

Examiner

Michael Bernshteyn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 13, 14, 17-19, 21 and 27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 13, 14, 17-19, 21 and 27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/09/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claim 21 is objected to because of the following informalities: improper Markush group format. According MPEP § 2171.05(h), one acceptable form of alternative expression, which is commonly referred to as a Markush group, recites members as being "selected from the group consisting of A, B and C." See *Ex parte Markush*, 1925 C.D. 126 (Comm'r Pat. 1925). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term 'substantial' used in all above claims is a relative term, which renders the claims indefinite. The term 'substantial' is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not reasonably appraised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-7, 13, 14, 17-19, 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (U. S. Patent 5,439,993) in view of Burgert et al. (U. S. Patent 5,629,377).

With regard to the limitations of claims 1-7, 21 and 27, Ito discloses a process for producing a highly water absorptive polymer, including the step of polymerizing an acrylic monomer including as the main component acrylic acid and/or an alkali metal salt thereof in the presence of a salt of a metal selected from the group consisting of Fe(II), Fe(III), Cu(II), Mn(II), VO(II), Co(II) and Ni(II) (abstract).

The acrylic monomer comprises as the main component **acrylic acid and/or an alkali metal salt** thereof. The alkali metal salt herein refers to a salt obtained by neutralizing the carboxyl groups contained in acrylic acid with an alkali metal hydroxide such as sodium hydroxide, potassium hydroxide or lithium hydroxide. A salt obtained by neutralizing acrylic acid with sodium hydroxide is particularly preferred when the properties of the finally obtainable highly water absorptive polymer and the production

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cost are taken into consideration. The acrylic monomer may further comprise as a **minor component** other monomer(s) copolymerizable with the main component, such as methacrylic acid (salt), itaconic acid (salt), acrylamide, 2-acrylamide-2-methylpropanesulfonic acid (salt), 2-(meth)acryloylethanesulfonic acid (salt) and 2-hydroxyethyl(meth)acrylate (col. 3, lines 20-49).

The acrylic monomer may also comprise a **crosslinking agent**. A water-soluble compound which contains in its molecule two or more polymerizable unsaturated groups and which is copolymerizable with the acrylic acid (salt) as the main component is generally used as the crosslinking agent. Preferred examples may include bisacrylamides such as N,N'-methylenebisacrylamide and N,N'-methylenebismethacrylamide, and long-chain diacrylates such as ethylene glycol di(meth)acrylate and polyethylene glycol di(meth)acrylate (col. 3, lines 52-61).

Ito discloses that the first process for producing highly water absorptive polymers according to the present invention is characterized in that the acrylic monomer is polymerized in the presence of a metallic salt. The metallic salt to be used in the present invention is a salt of a metal selected from the group consisting of Fe (II), Fe (III), Cu(II), Mn (II), VO(II), Co(II) and Ni(II) (col. 4, lines 1-27).

Ito does not disclose a chlorine- or bromine-containing oxidation agent to form a crosslinked hydrogel.

With regard to the limitations of claims 1-7, 21 and 27, Burgert discloses processes for the preparation of water-absorbent resin particles which comprise the inclusion of chlorine or bromine containing oxidizing agent followed by the heat-

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treatment to produce particles with superior centrifuged absorption capacity in combination with high absorption under load at high load, and acceptable levels of residuals. These water-absorbent resin particles provide superior performance when incorporated into absorbent structures (abstract).

Burgert discloses that any suitable oxidizing agent, which produces the desired particle properties, may be used. Desirably, a chlorine or bromine containing oxidizing agent is used during the heating process. Preferred oxidizing agents are bromates and chlorates and chlorites. The counter ion of the bromate or chlorate salt can be any counter ion which does not significantly interfere in the preparation of the resin particles or their performance. Preferably, the counter ions are alkaline earth metals ions or alkali metal ions. More preferred counter ions are the alkali metals, with potassium and sodium even more preferred. The chlorine-containing oxidizing agents are preferred (col. 8, lines 42-53).

Both references are analogous art because they are from the same field of endeavor concerning the processes for the preparation of water-absorbent polymers made from carboxyl-containing monomers.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate chlorine or bromine containing oxidizing agent followed by the heat-treatment, such as alkali metals with potassium and sodium, as taught by Burgert into the Ito's process for preparation of water-absorbent polymers made from carboxyl-containing monomers in order to obtain particles with superior centrifuged absorption capacity in combination with high absorption under load at high

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load, and acceptable levels of residuals, and thus to arrive at the subject matter of claim 1 and dependable claims 2-7, 21 and 27. These water-absorbent resin particles provide superior performance when incorporated into absorbent structures (US'377, abstract).

It is axiomatic that one who performs the steps of a process must necessarily produce all of its advantage. Mere recitation of a newly discovered property or function what is inherently possessed by the things or steps in the prior art does not cause a claim drawn to those things to distinguish over the prior art. Leinoff v. Louis Milona & Sons, Inc. 220 USPQ 845 (CAFC 1984).

The difference between all of the processes in claims 1-7 mainly is the sequence of steps. However, since applicant does not demonstrate the criticality of the sequence of steps, the selection of any order of performing process step is *prima facie* obvious in the absence of unexpected results. In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) and "Selection of any order of mixing ingredients is *prima facie* obvious". In re Gibson 39 F. 2d 975, 5 USPQ 230 (CCPA). See MPEP § 2144.04.

With regard to the limitations of claims 13 and 14, Ito discloses that in either polymerization method, the metallic salt is usually added to the aqueous acrylic monomer solution when it is prepared. The amount of the metallic salt added varies depending on the monomer concentration and the degree of neutralization. However, it is, in general, 0.0001 to 3% by weight, preferably 0.001 to 1% by weight based on the acrylic monomer (col. 6, lines 25-32).

It is noted that the amount of the weight ratio of the metallic salt is a result effective variable, and therefore, it is within the skill of those skilled in the art to find the

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optimum value of a result effective variable, as per *In re Boesch and Slaney* 205 USPQ 215 (CCPA 1980). See also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382: "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."

With regard to the limitations of claims 17 and 19, Ito discloses that specific examples of such metallic salts include (a) **iron(III) chloride**, iron(III) acetate, iron(III) phosphate, **iron(III) sulfate**, **iron(III) nitrate** and **iron(III) citrate**; (b) iron(II) chloride, iron(II) lactate, iron(II) oxalate, iron(II) sulfate and iron(II) sulfide; (c) copper(II) chloride, copper(II) bromide, copper(II) sulfate, copper(II) nitrate and copper(II) acetate, etc. Of the above enumerated metallic salts, iron(III) salts, copper(II) salts and vanadyl(II) salts are particularly preferred (col. 4, lines 27-51).

With regard to the limitations of claim 18, Ito discloses that it has also been found that by modifying the surface of the polymer with a specific silane compound, the resulting polymer shows a higher water absorption rate and has a remarkably enhanced gel strength without substantially deteriorating its excellent water absorption capacity (col. 2, lines 28-34). After the polymerization is completed, the resulting polymer is successively treated with the above-mentioned silane compound to modify the surface thereof (col. 6, lines 41-44).

Thus, the combination of Ito and Burgert renders all instant claims *prima facie* obvious in view of absent of unexpected results commensurate in scope of claims.

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Conclusion

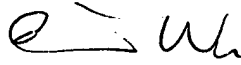
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Patent Examiner
Art Unit 1713

MB
04/10/2006


DAVID W. WU
SUPERVISORY PATENT EXAMINER
ELECTRONIC BUSINESS CENTER 1700